

# **Systems Analysis: A Tool to Understand and Predict Terrorist Activities**

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# The Three Databases (Source Material)

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- 1. Terrorist Pilot Training**  
(Washington Post)
- 2. WTC Terrorist Cell Activities**  
(Washington Post)
- 3. Osama bin Laden: Financial Support Networks** (Treasury Department Congressional Testimony)

# Analysis to a Purpose !

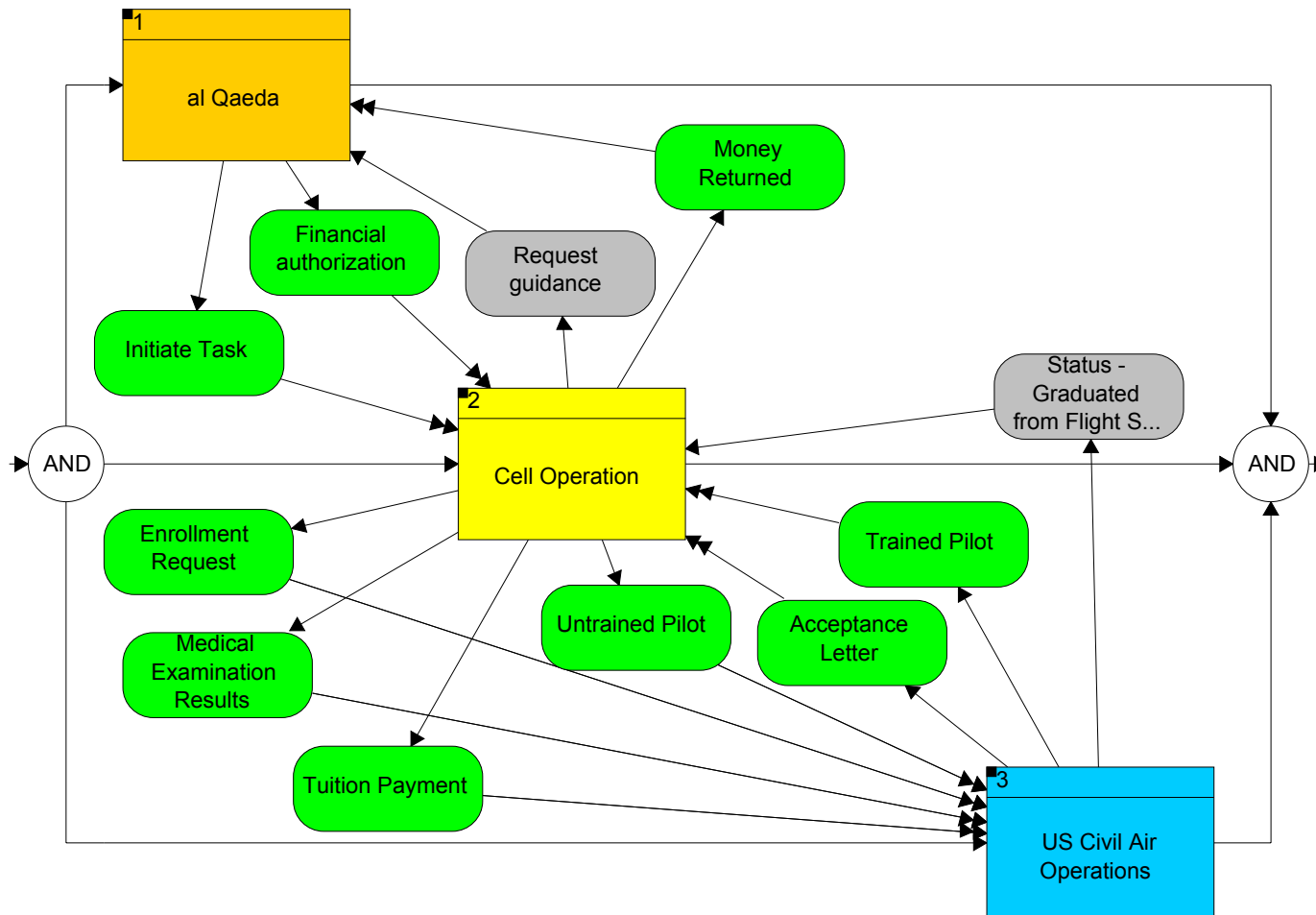
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- **Analysis is about predicting the future – not documenting the past.**
- **How do we do this?**
  - **Recognize that a target may be viewed as a dynamic system**
  - **Systems may be analyzed statically or dynamically**
  - **Systems need to be represented as separate functional and physical models.**
  - **System functions change slowly with time while physical elements may change dramatically**
- **The model provides evidence of how well the target is understood.**
- **The model is reverse-engineered from multi-source, sampled data.**
- **Total analysis is never completed.**

# Views From the Terrorist Training Data

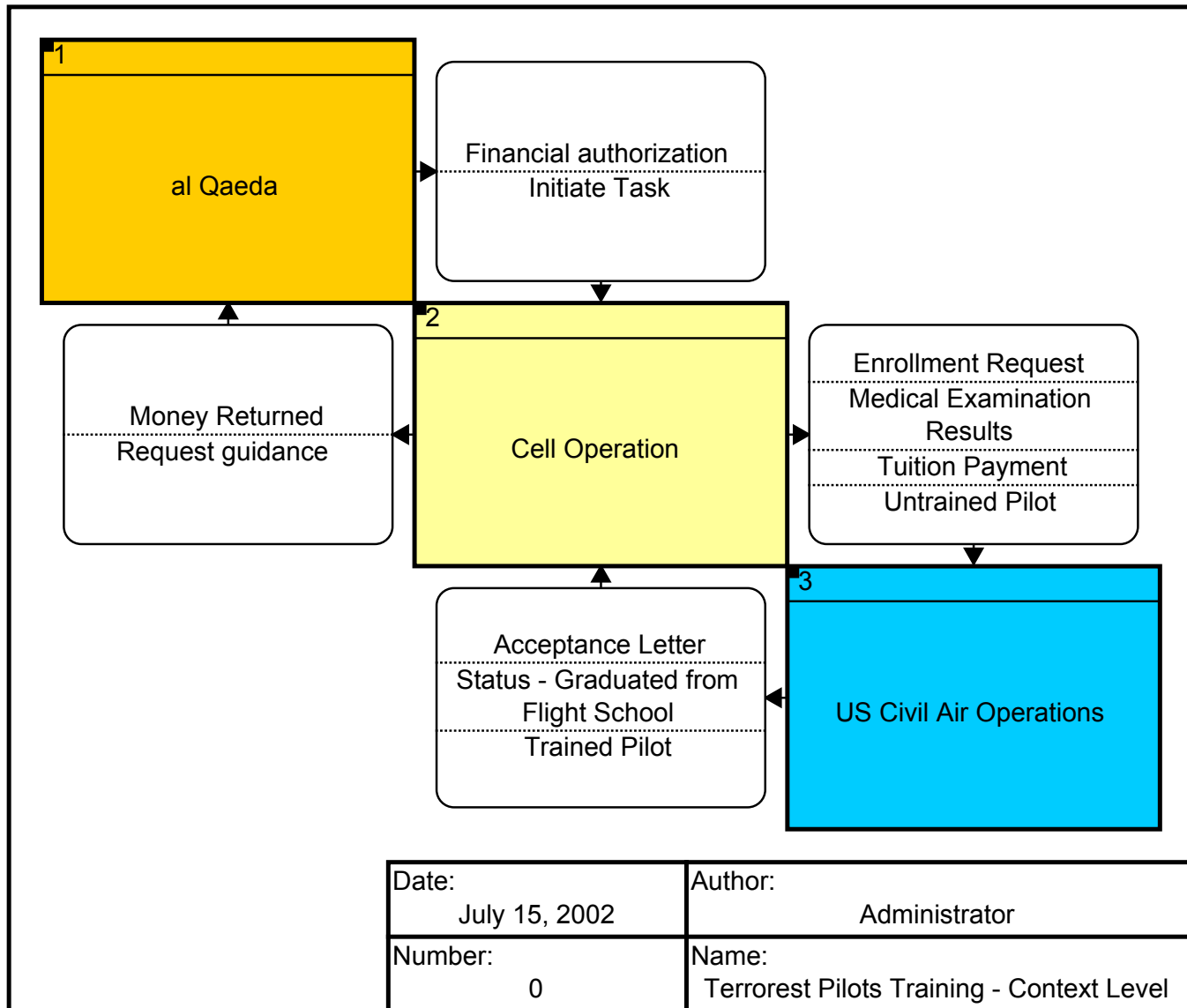
**Material/data extracted from various  
Washington Post articles**

# Functional Architecture – Context Level

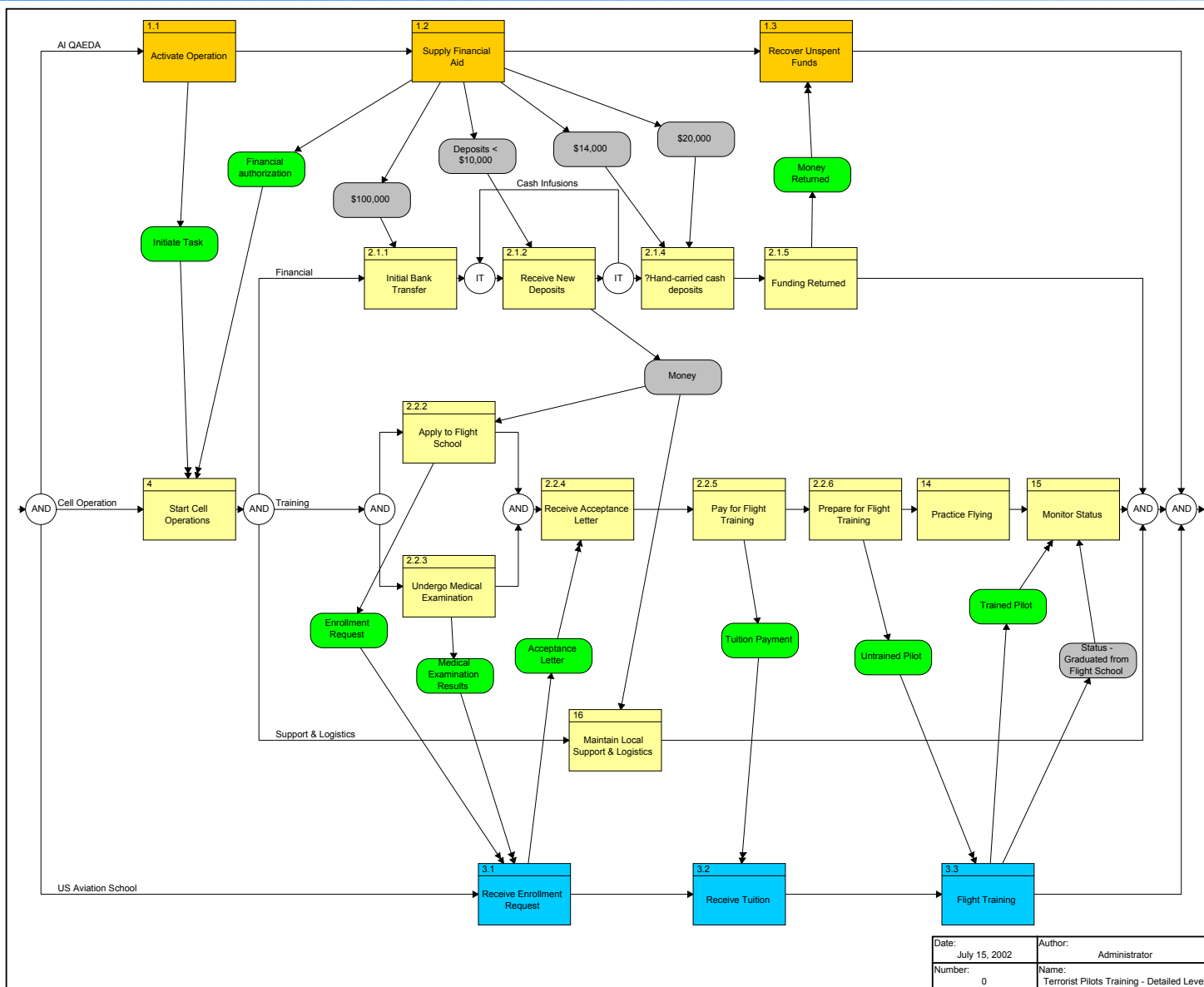


Date: July 15, 2002	Author: Administrator
Number: 0	Name: Terrorist Pilots Training - Context Level

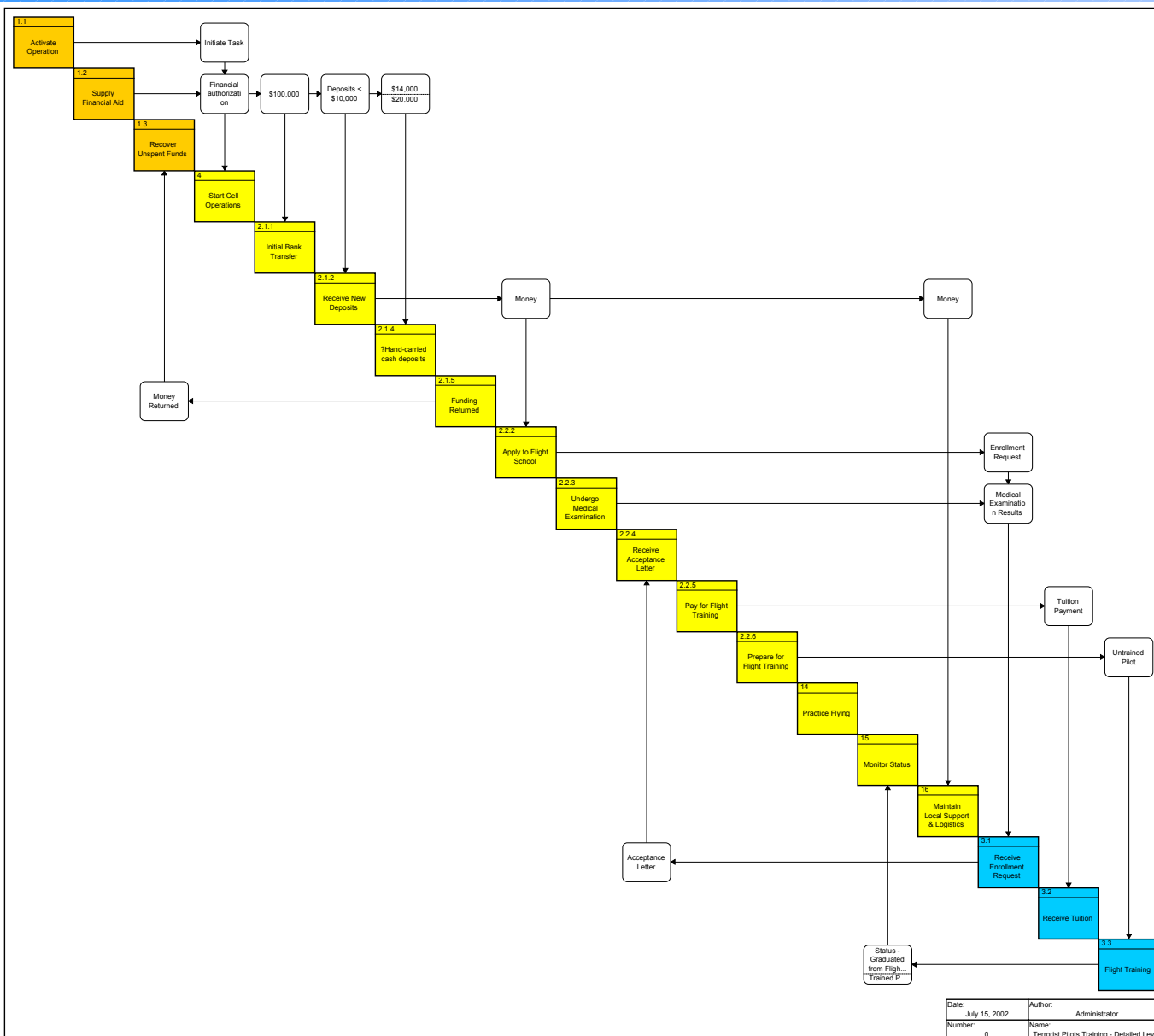
# N2 Interface Diagram - Context Level



# Functional Architecture – Detailed Level



# N2 Interface Diagram – Context Level

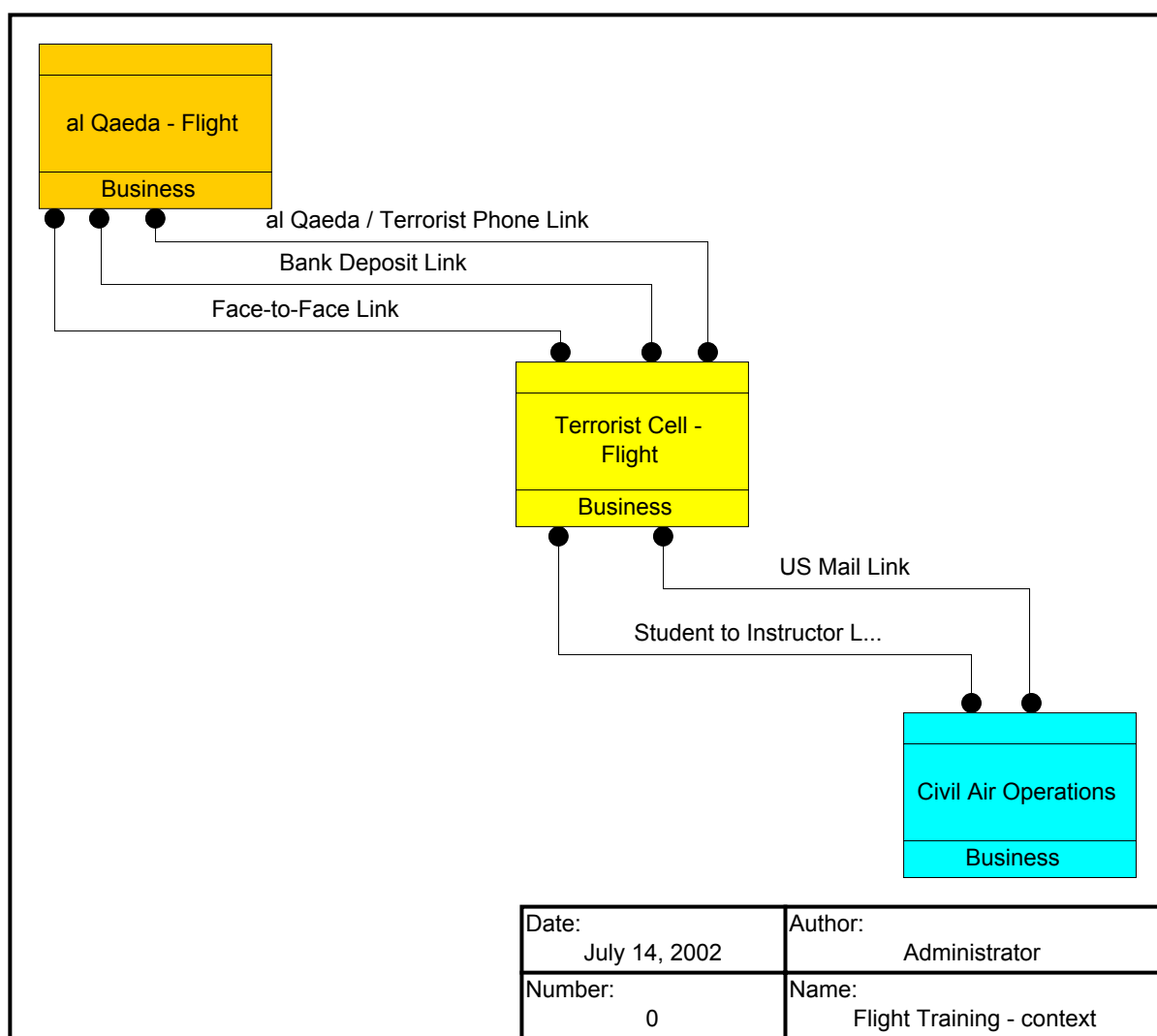


## NOTE:

- The N2 chart is the easiest view for reverse engineering a system with only partial or missing data



# Physical Links – Context Level



## NOTE:

- If you missed it, we are building functional and physical models.

# **Analysis Overview – We are Trying to Get to the Top of the Pyramid**



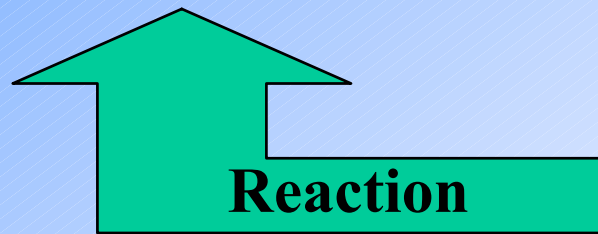
# System On System Is Feasible and Straightforward

**Intelligence / Military System**

Green				
	Yellow			
		Yellow		
			Yellow	
				Yellow

**Action**

**System of Interest**

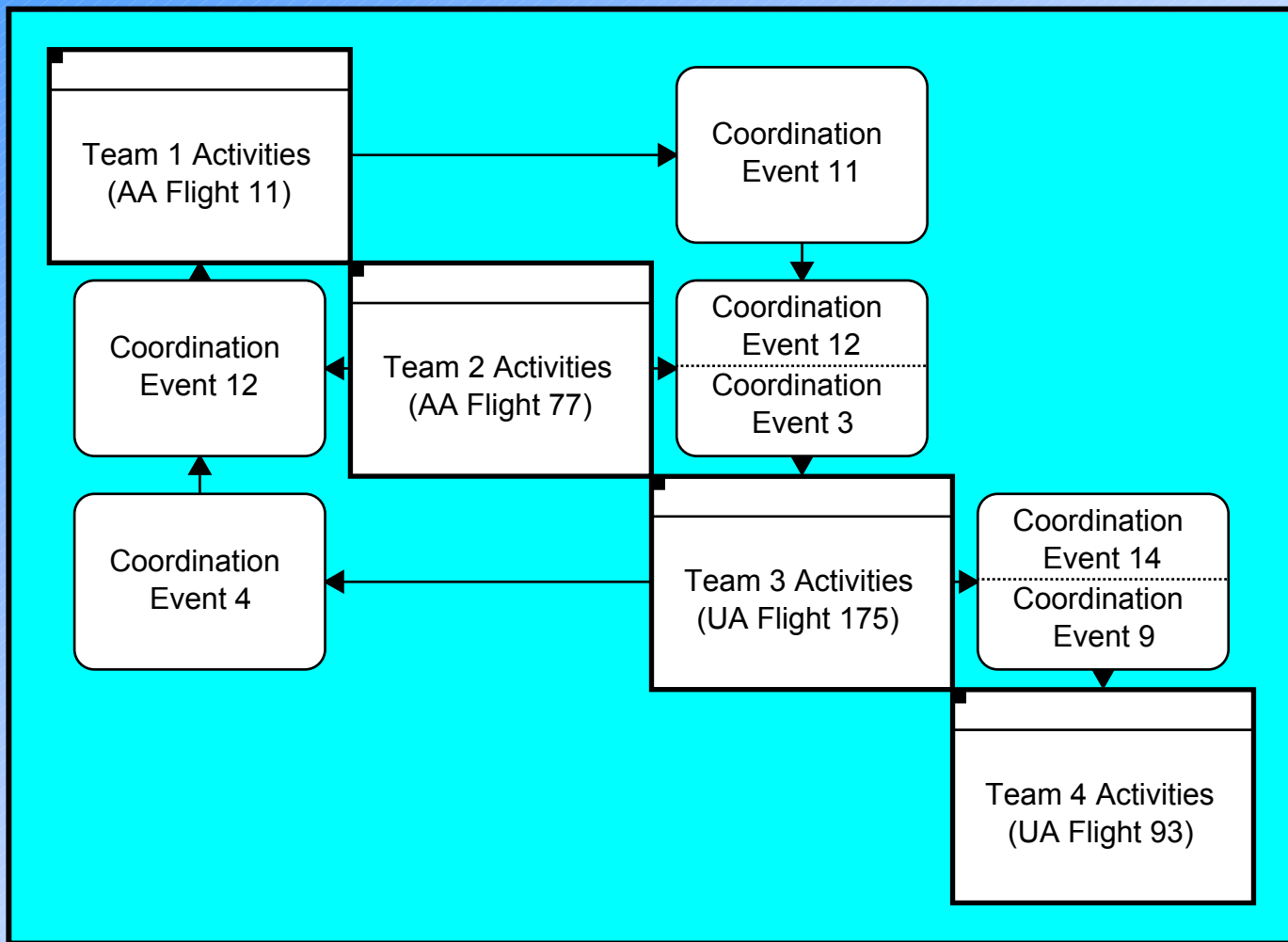


Yellow				
	Yellow			
		Red		
			Yellow	
				Yellow

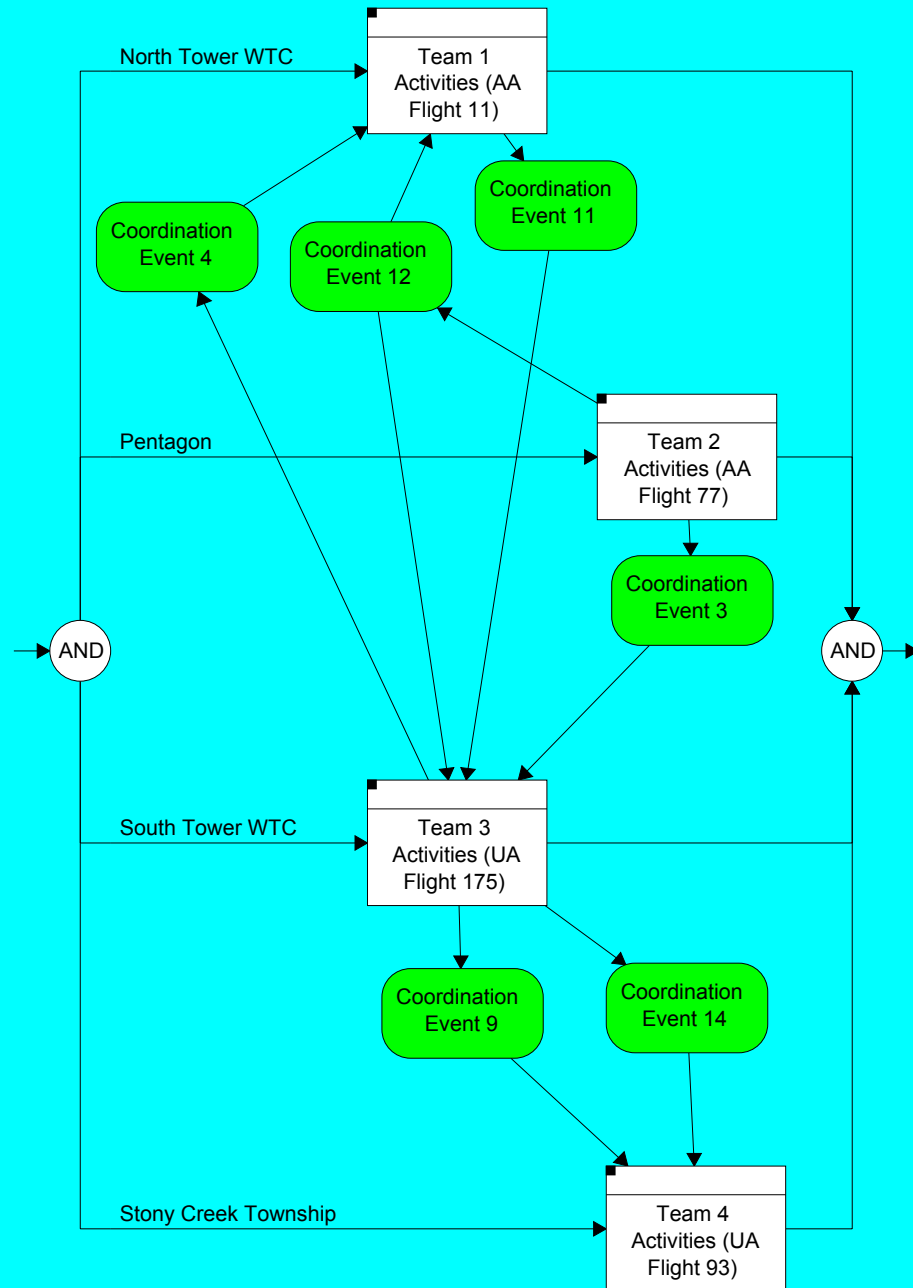
# **Views From the WTC Terrorist Attack**

**Material/data extracted from various  
Washington Post articles**

# Activities of WTC Highjackers (N2 Interface Diagram – Top Level)

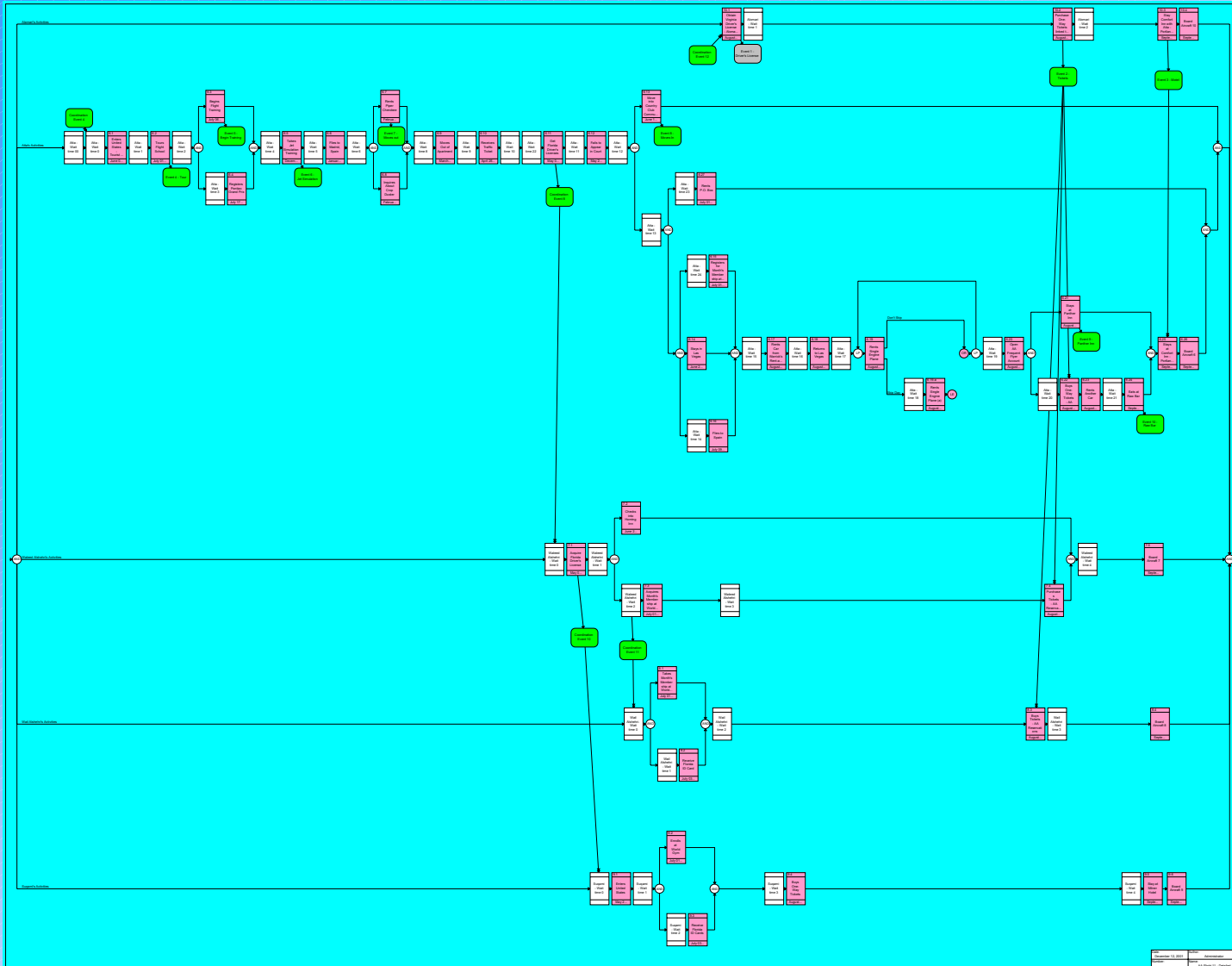


# Activities of WTC Highjackers (Behavior - Top)



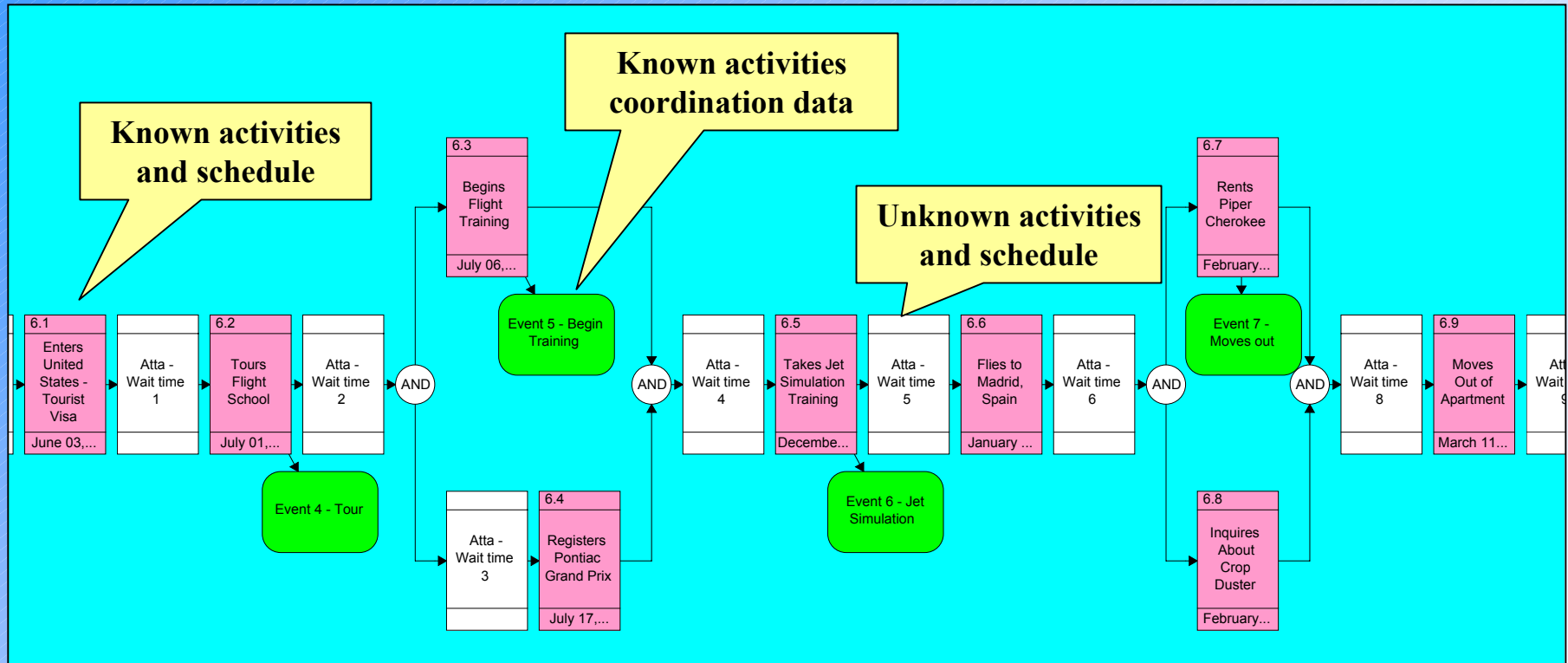
- Behavior and N2 Modeling included hierarchies down to behavior at the individual terrorist level (see COREsim simulator output for Atta)
- The cell is made up of 19 terrorists in 4 coordinated teams
- The total timeline from first terrorist entry into US until the attack on the WTC and Pentagon involved about 33 months

# Activities of Team 1 (AA Flight 11) – Next Level of Detail



- Each main branch represents the activities of one terrorist (5 on this plane)
- Linked activities between terrorists indicated by interfacing items

# Section of ATTA's Timeline



## NOTE:

- Behavior diagrams and scenarios are represented in a graphical language that is executable, allowing automatic simulation of the graphical model



# Details of ATTA's Activities are in the Repository

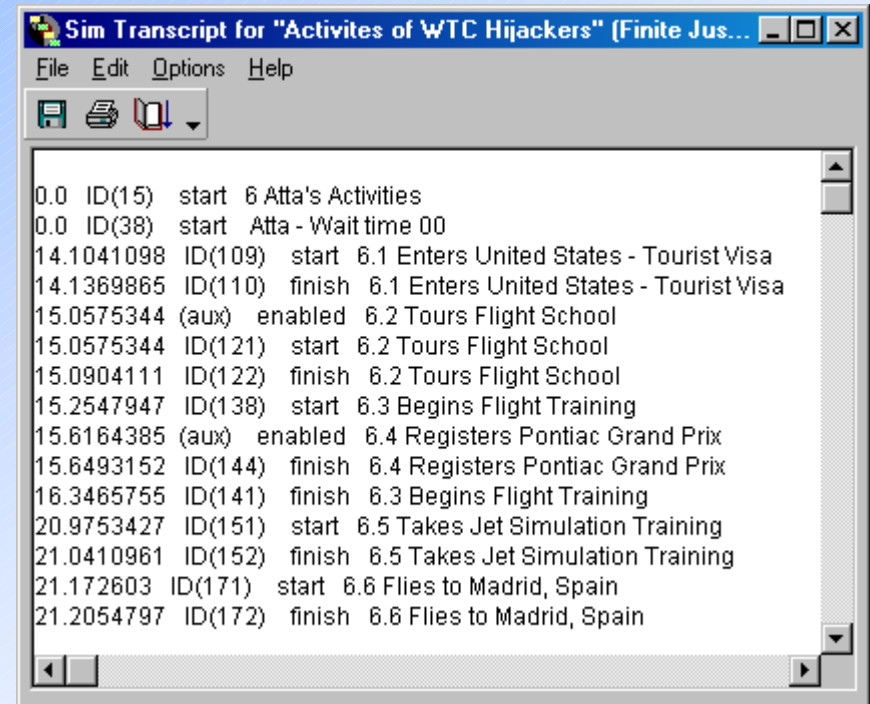
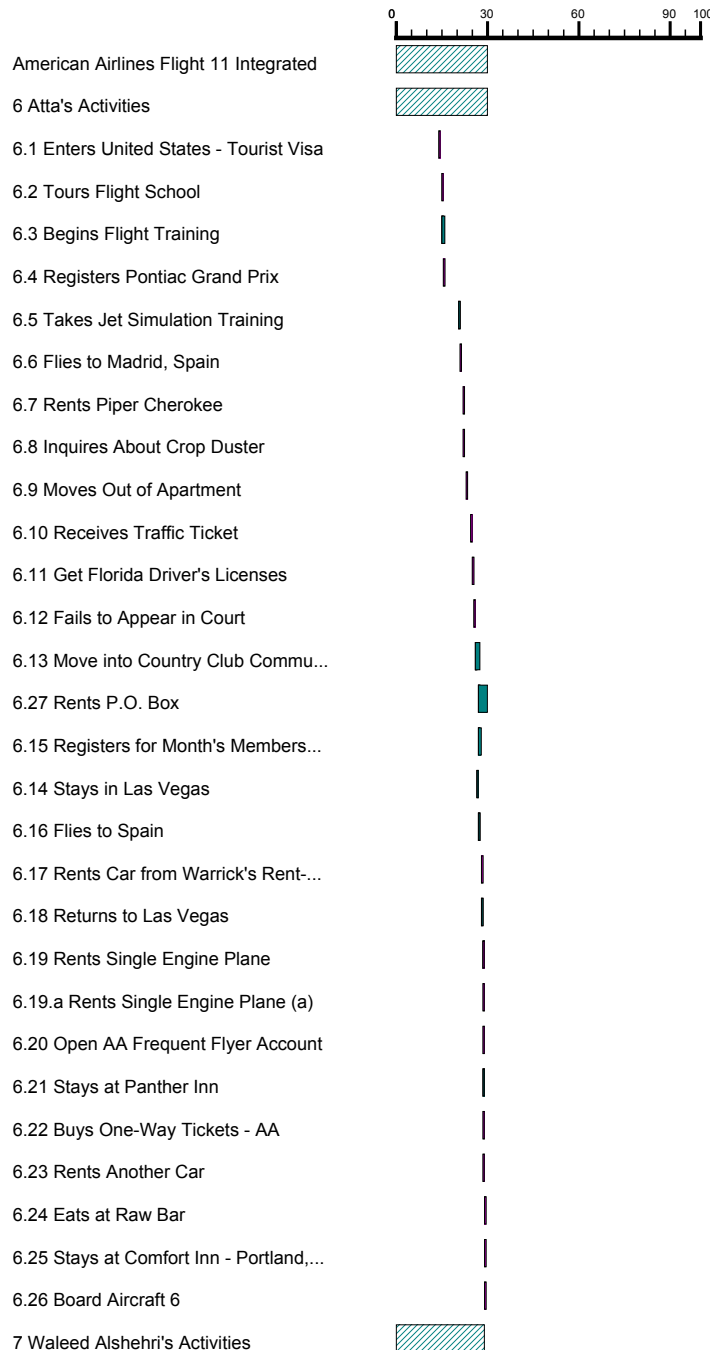
## Class: Activity

12/18/2001

Folders: Atta, Alomari, Waleed Alshehri, Wail Alshehri, Suqami

Number & Name	When	Description
6 Atta's Activities		
6.1 Enters United States - Tourist Visa	6/3/2000	June 3, 2000 Atta enters United States at Newark on a tourist visa.
6.2 Tours Flight School	7/1/2000	July 2000 Atta and Al-Shehhi tour Aiman Flight School in Norman, Oklahoma, but don't enroll.
6.3 Begins Flight Training	7/6/2000	July 6, 2000 Atta and Al-Shehhi start pilot training at Huffman Aviation, Venice, Florida.
6.4 Registers Pontiac Grand Prix	7/17/2000	July 17, 2000 Atta registers a red Pontiac Grand Prix, at 4890 Pompano Road, Venice, Florida.
6.5 Takes Jet Simulation Training	12/29/2000	December 29-30 2000 Atta and Al-Shehhi pay for two three-hour jet simulator lessons in Miami.
6.6 Flies to Madrid, Spain	1/4/2001	January 4, 2001 Atta leaves the United States, flying from Miami to Madrid, Spain.
6.7 Rents Piper Cherokee	2/1/2001	February 2001 Early February Atta and Al-Shehhi visit Atlanta, rent a Piper Cherokee plane.
6.8 Inquires About Crop Duster	2/1/2001	Early February 2001 Atta inquires about crop-dusters at Belle Glade State Municipal Airport in Belle Glade, Florida.
6.9 Moves Out of Apartment	3/11/2001	March 11, 2001 Atta and Al-Shehhi move out of their Hamburg apartment.
6.10 Receives Traffic Ticket	4/26/2001	April 26, 2001 Atta receives a traffic ticket in Tamarac, Florida, for driving without a license.
6.11 Get Florida Driver's Licenses	5/2/2001	May 2, 2001 Atta and Jarrah get Florida driver's licenses. Atta lists address at 10001 N. Atlantic Boulevard, Coral Springs, Florida.

# Highjacker Timeline for Atta (From COREsim)

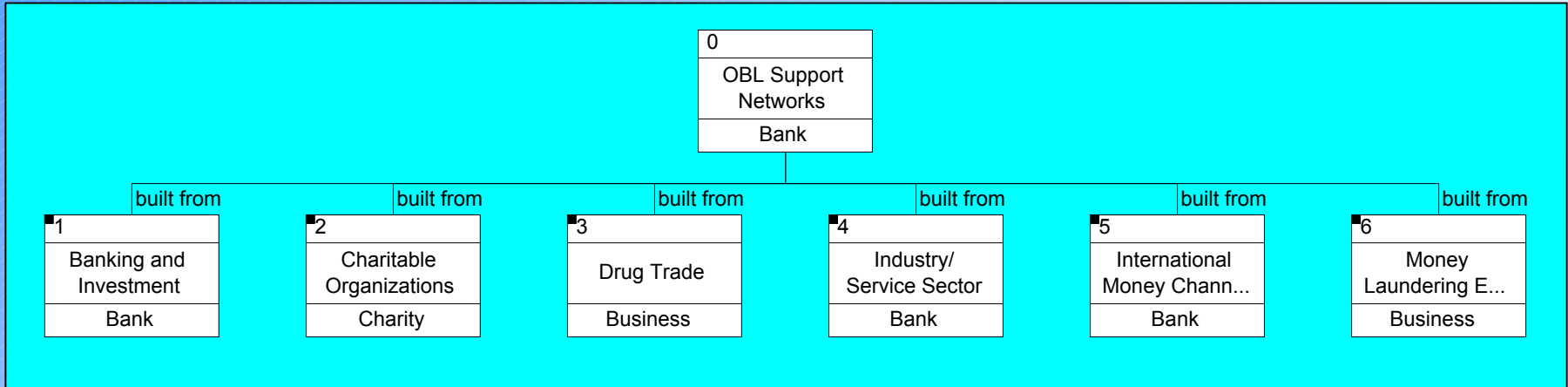


# **Views From Osama bin Laden: Financial Support Networks**

**Source: Mr. Johnathon Winer testimony to US  
Senate Banking Committee, September 2001**

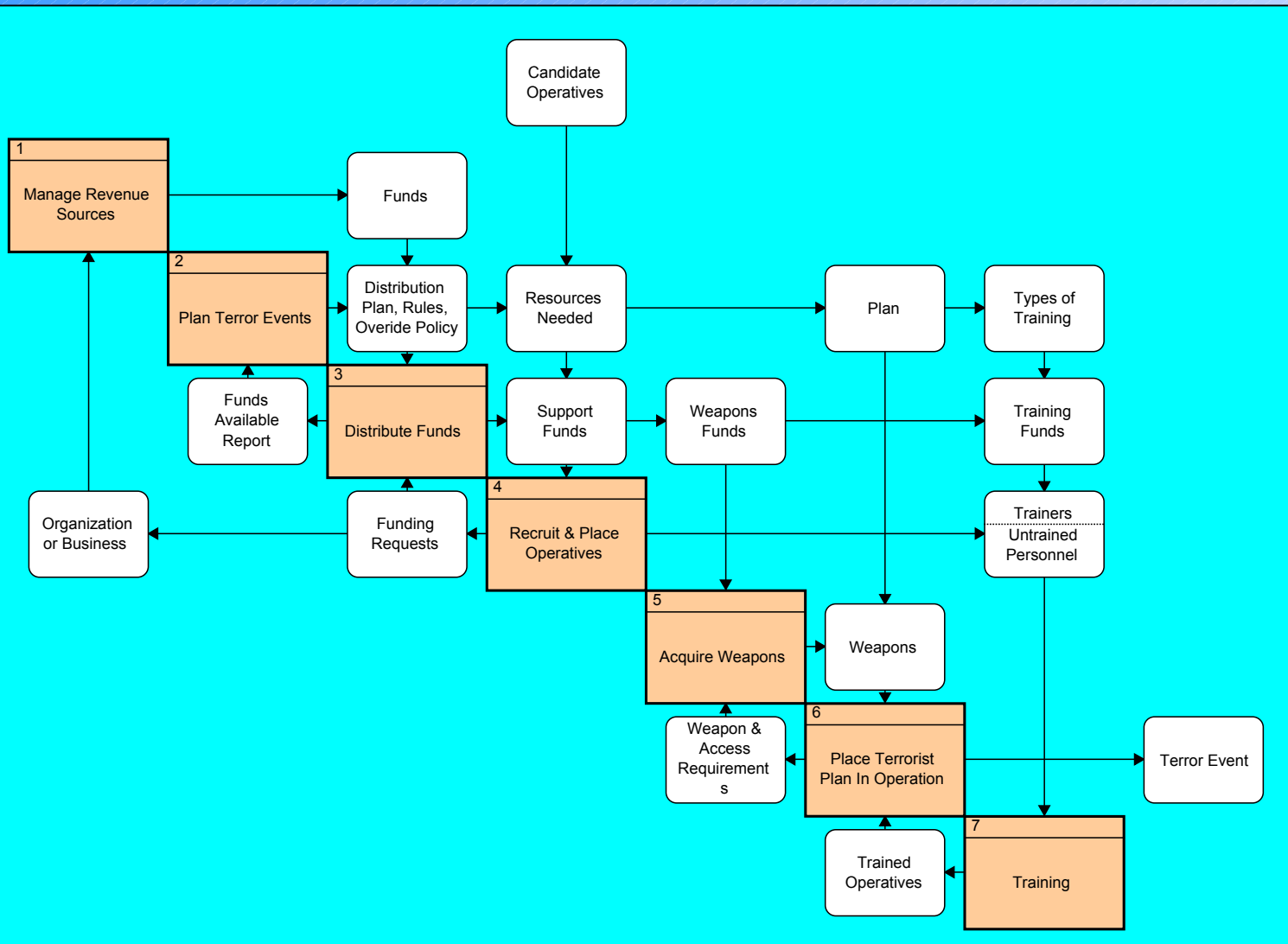
# Top Level - OBL Financial Support Networks

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# Postulated OBL Financial Networks

## Functional Context



# Sample Custom Table Output – One of Many Standard Report Scripts Provided

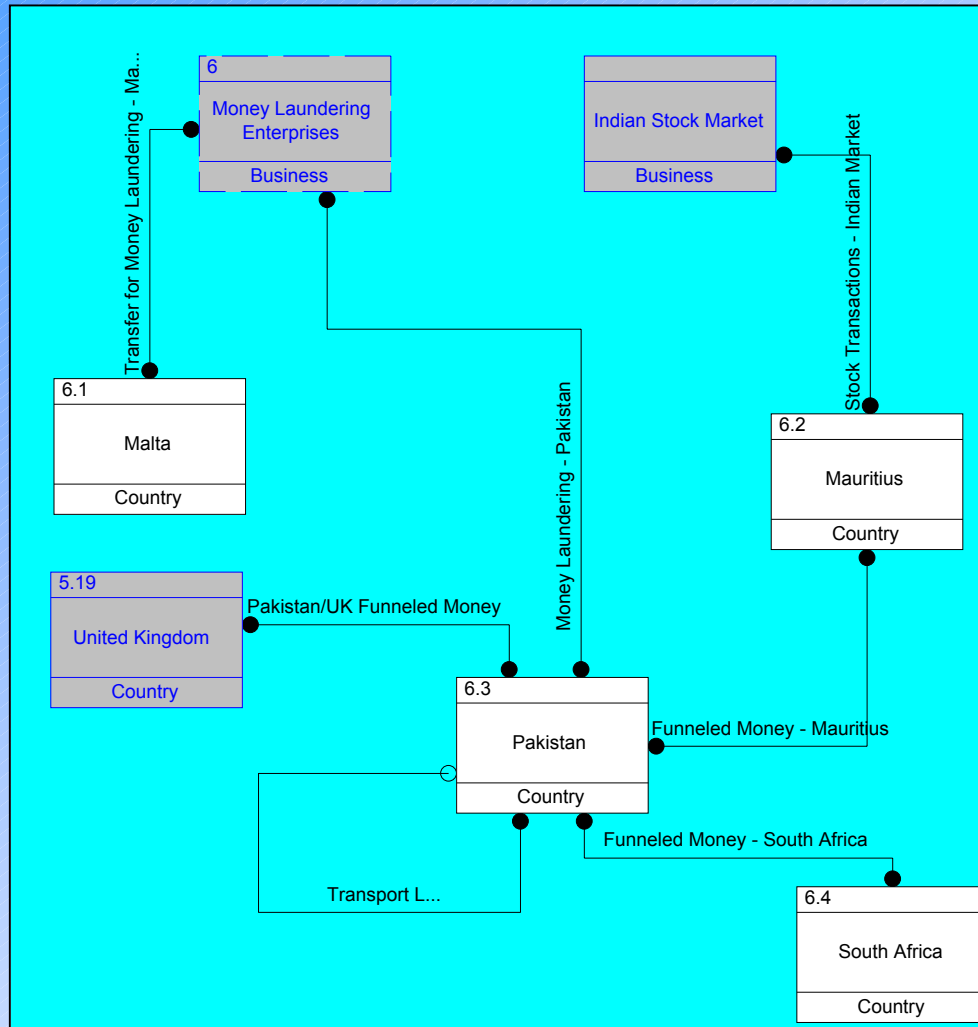
Class: Actor

7/9/2002

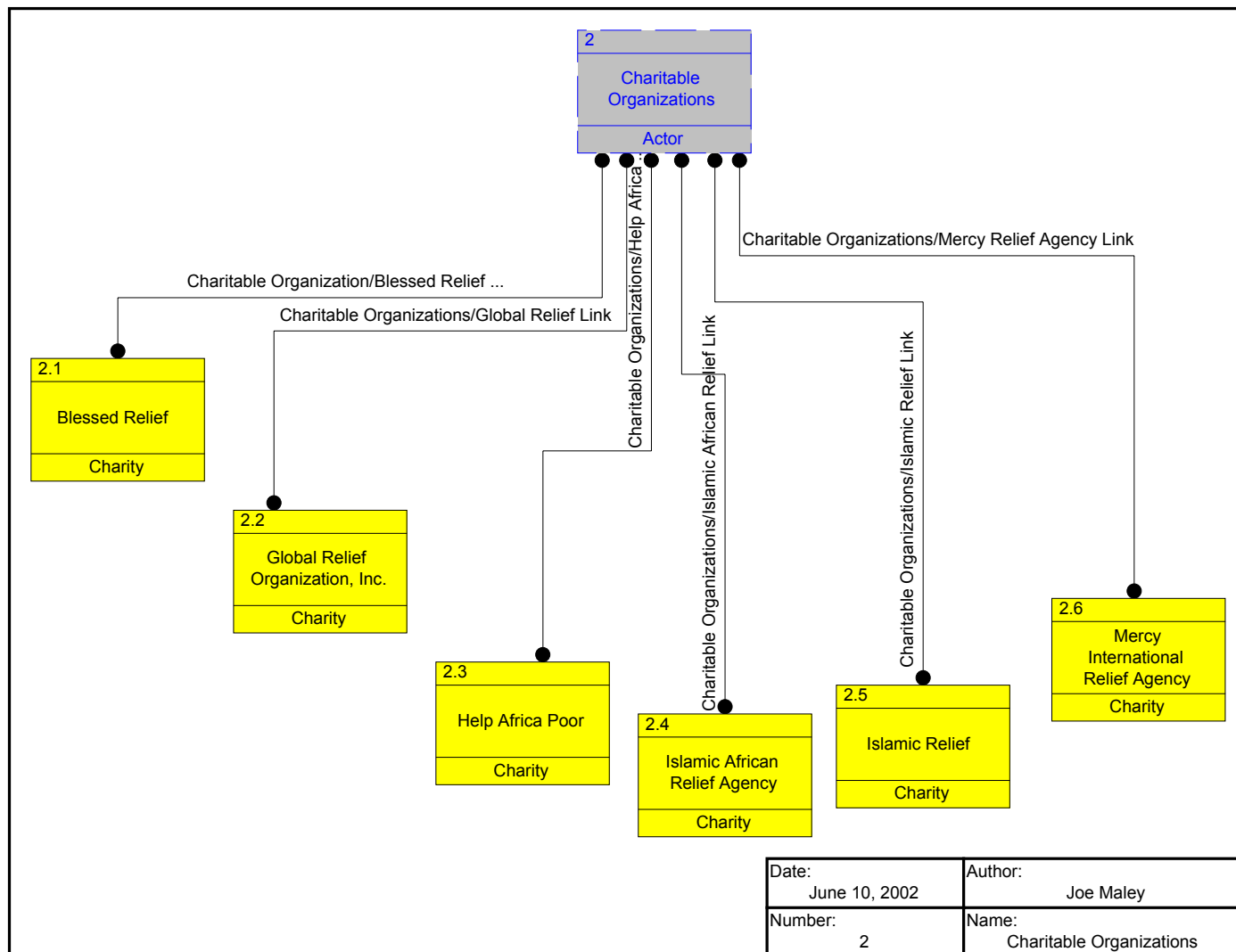
Folders: Banks, Businesses, Charitable Organizations, People, Places

Number & Name	connected to	built from	built in	located at
1.1 United Arab Emirates	Banking/UAE Link UAE/Dubai Link	1.1.1 Dubai	1 Banking and Investment	
1.1.1 Dubai	Dubai/Islamic Bank Link UAE/Dubai Link	1.1.1.1 Dubai Islamic Bank	1.1 United Arab Emirates	
1.1.1.1 Dubai Islamic Bank	Dubai/Islamic Bank Link		1.1.1 Dubai	
1.2 United Kingdom	Afghanistan/UK Link Banking/United Kingdom United Kingdom/London Link	1.2.1 London	1 Banking and Investment	
1.2.1 London	London/Barclays Bank Link London/NWB Link Transfer Money - Luxembourg United Kingdom/London Link	1.2.1.1 Barclays Bank 1.2.1.2 National Westminster Bank 1.2.1.3 Advice and Reformation Committee	1.2 United Kingdom	
1.2.1.1 Barclays Bank	Barclays/Advice and Reformation Link London/Barclays Bank Link		1.2.1 London	London
1.2.1.2 National Westminster Bank	London/NWB Link		1.2.1 London	London
1.2.1.3 Advice and Reformation Committee	Barclays/Advice and Reformation Link		1.2.1 London	London
1.3 Albania	Albania/Islamic Bank Banking/Albania Link	1.3.1 Tirana	1 Banking and Investment	
1.3.1 Tirana	Albania/Islamic Bank Tirana/Islamic Bank Link	1.3.1.1 Islamic Bank of Tirana	1.3 Albania	
1.3.1.1 Islamic Bank of Tirana	Tirana/Islamic Bank Link		1.3.1 Tirana	
1.4 Algeria	Algeria/Al-Shamai Bank Link Banking/Algeria Link	1.4.1 Al-Shamai Islamic Bank 1.4.2 Islamic Salvation Front	1 Banking and Investment	
1.4.1 Al-Shamai Islamic Bank	Algeria/Al-Shamai Bank Link		1.4 Algeria	

# Osama bin Laden Money Laundering Enterprises – Sample Link Diagram



# OBL Charitable Organization Links





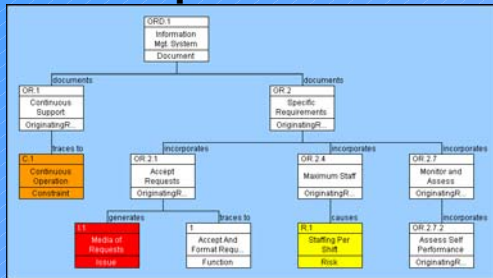
# Points Made in the Briefing

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- **System Engineering can contribute to the analysis of intelligence data**
- **We are building / deducing models of the systems of interest from multi-source sampled data**
- **We want to be able to use the models for prediction**
- **Collaboration (is essential for multi-dimensional models)**
- **Communication is ...**
- **Documentation is...**
- **Divide and conquer – multiple views**
- **Capture business/culture/C2/ ...requirements and rules in the models**
- **Single repository from multi-source information**
- **In operation, functional models are less likely to change than the physical models**

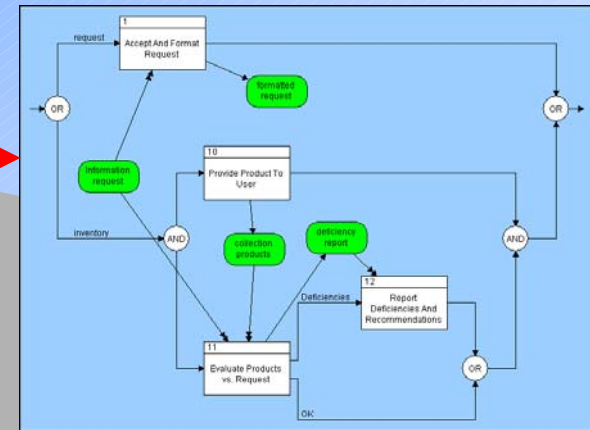
# Consistency through Integrated Life-Cycle Knowledge Management

## Source Requirements Domain



*Originating requirements  
trace to behavior*

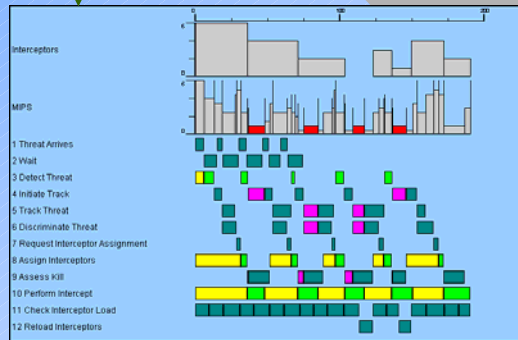
## Behavior Domain



*Behavior is allocated to  
physical components*

**CORE  
Repository**

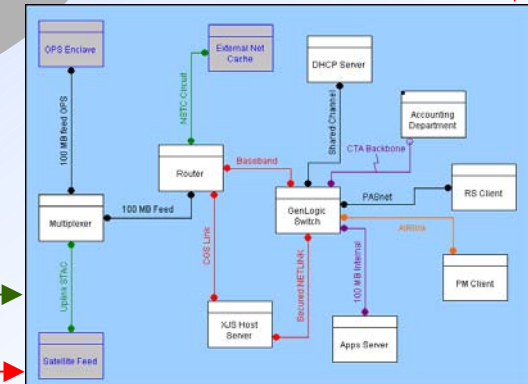
## V&V Domain



*verified by*

*verified by*

## Architecture Domain



*Originating requirements  
trace to physical components*

# Additional Slides

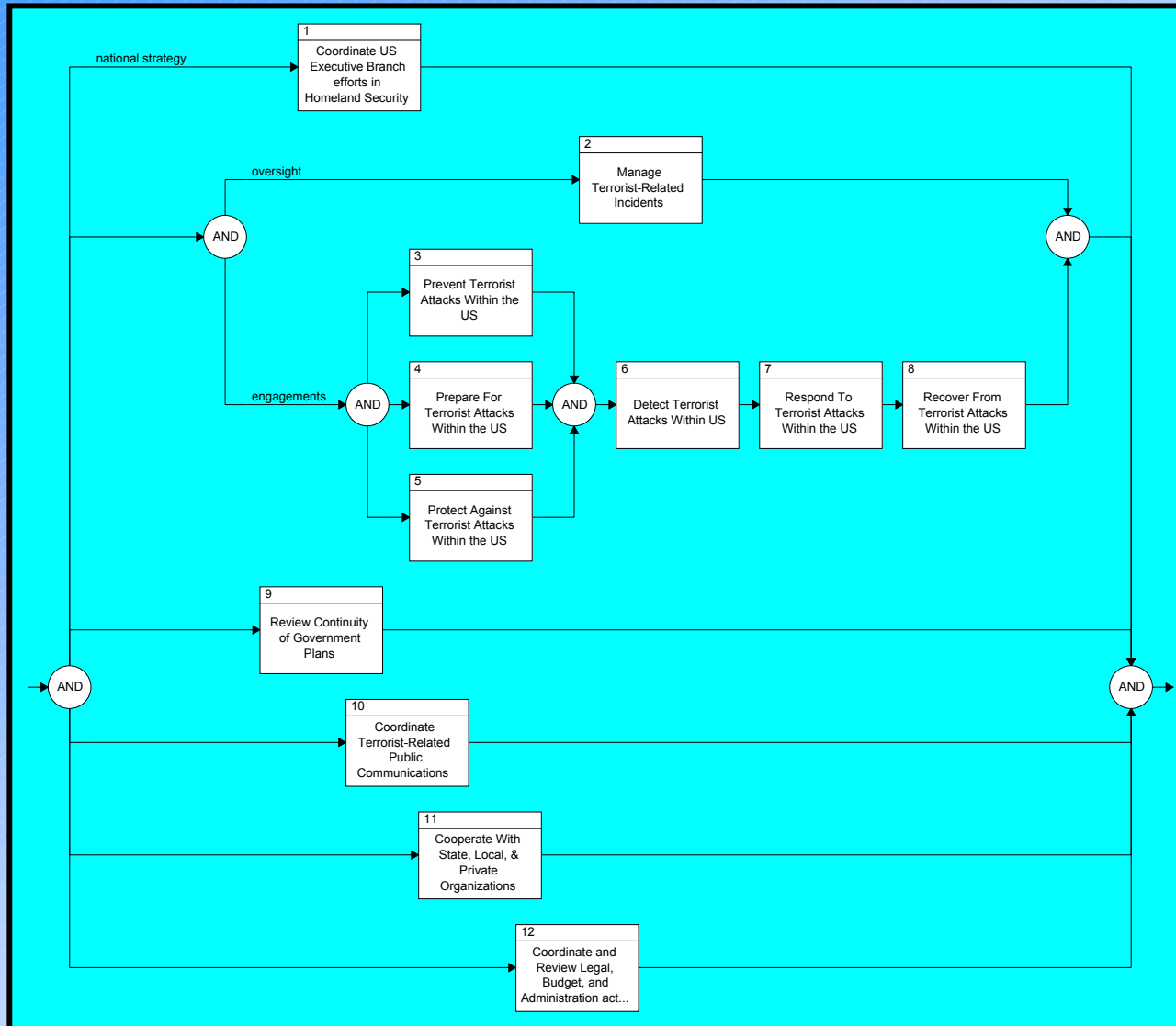
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# Extractions From the Executive Order on Homeland Security

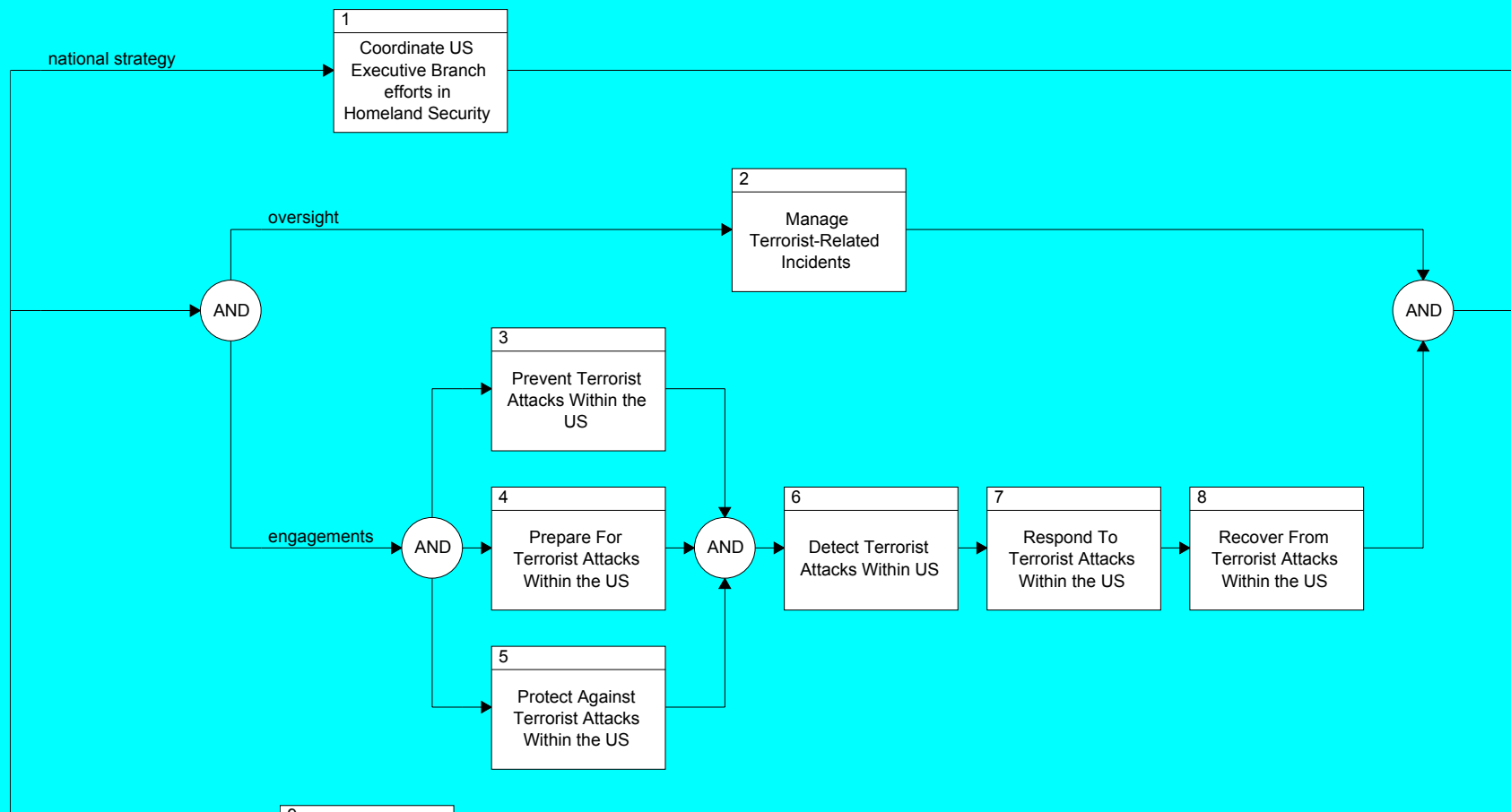
# Originating Requirements Have Been Extracted From The Homeland Security Executive Order

Number & Name	Description	incorporates	incorporated in
OR.3.a National Strategy	The Office shall work with executive departments and agencies, State and local governments, and private entities to ensure the adequacy of the national strategy for detecting, preparing for, preventing, protecting against, responding to, and recovering from terrorist threats or attacks within the United States and shall periodically review and coordinate revisions to that strategy as necessary.		OR.3 Functions
OR.3.b Detection	The Office shall identify priorities and coordinate efforts for collection and analysis of information within the United States regarding threats of terrorism against the United States and activities of terrorists or terrorist groups within the United States. The Office also shall identify, in coordination with the Assistant to the President for National Security Affairs, priorities for collection of intelligence outside the United States regarding threats of terrorism within the United States.	OR.3.b.1 Detection.1 OR.3.b.2 Detection.2	OR.3 Functions
OR.3.b.1 Detection.1	In performing these functions, the Office shall work with Federal, State, and local agencies, as appropriate, to:	OR.3.b.1.a Detection.1.a OR.3.b.1.b Detection.1.b OR.3.b.1.c Detection.1.c OR.3.b.1.d Detection.1.d OR.3.b.1.e Detection.1.e	OR.3.b Detection
OR.3.b.1.a Detection.1.a	facilitate collection from State and local governments and private entities of information pertaining to terrorist threats or activities within the United States;		OR.3.b.1 Detection.1

# Required Homeland Defense Functions (per Executive Order)



# Required Homeland Defense Functions, (More Detail)



# Homeland Security Office – Initial Requirements and Traceability

